



Effects of Biodiesel Growth on Feed and Food Markets: An Update

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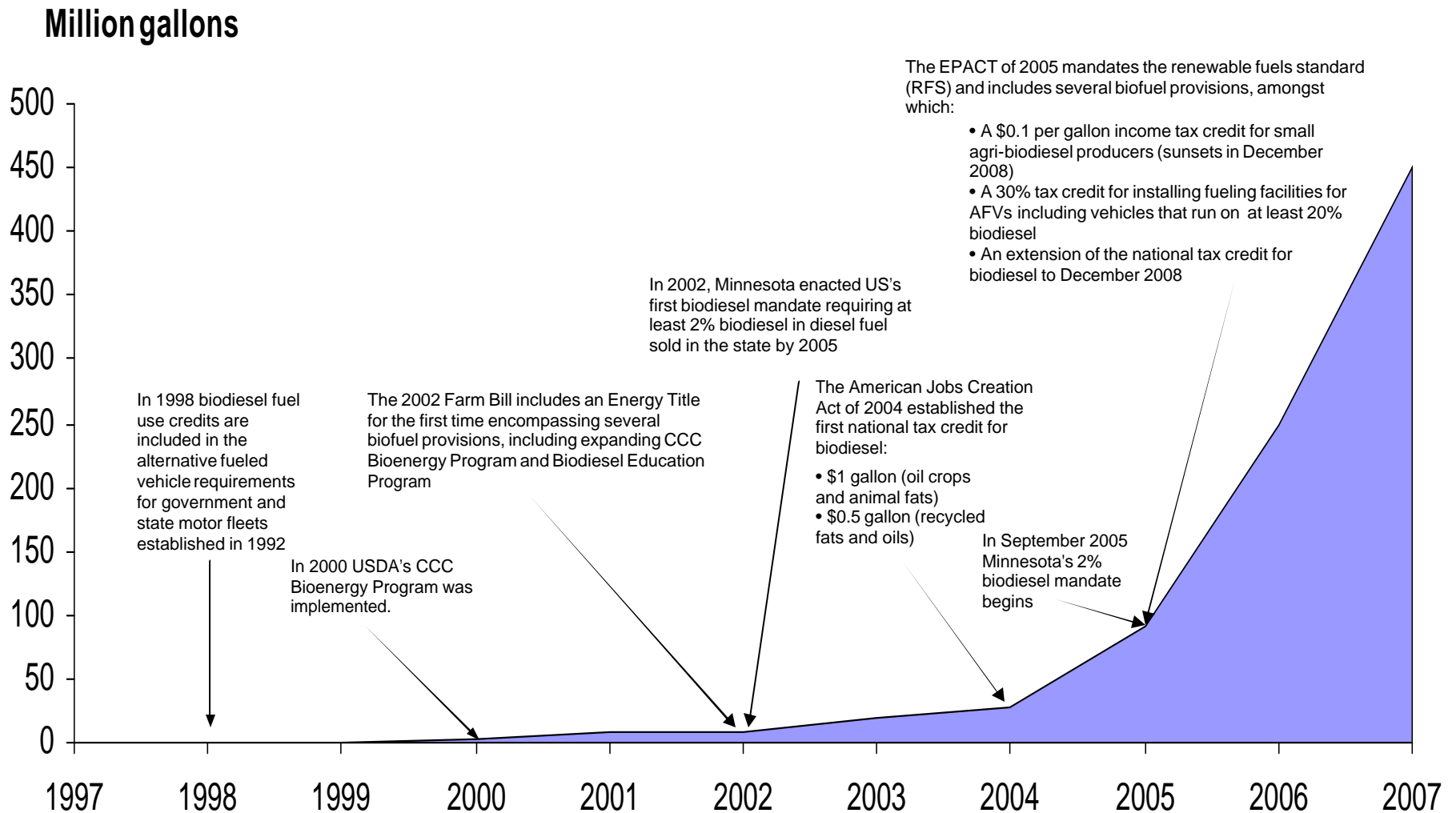
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Objective: Analyze the Effect of Biodiesel Growth on Feed and Food Markets

First we must determine the likely growth path of biodiesel

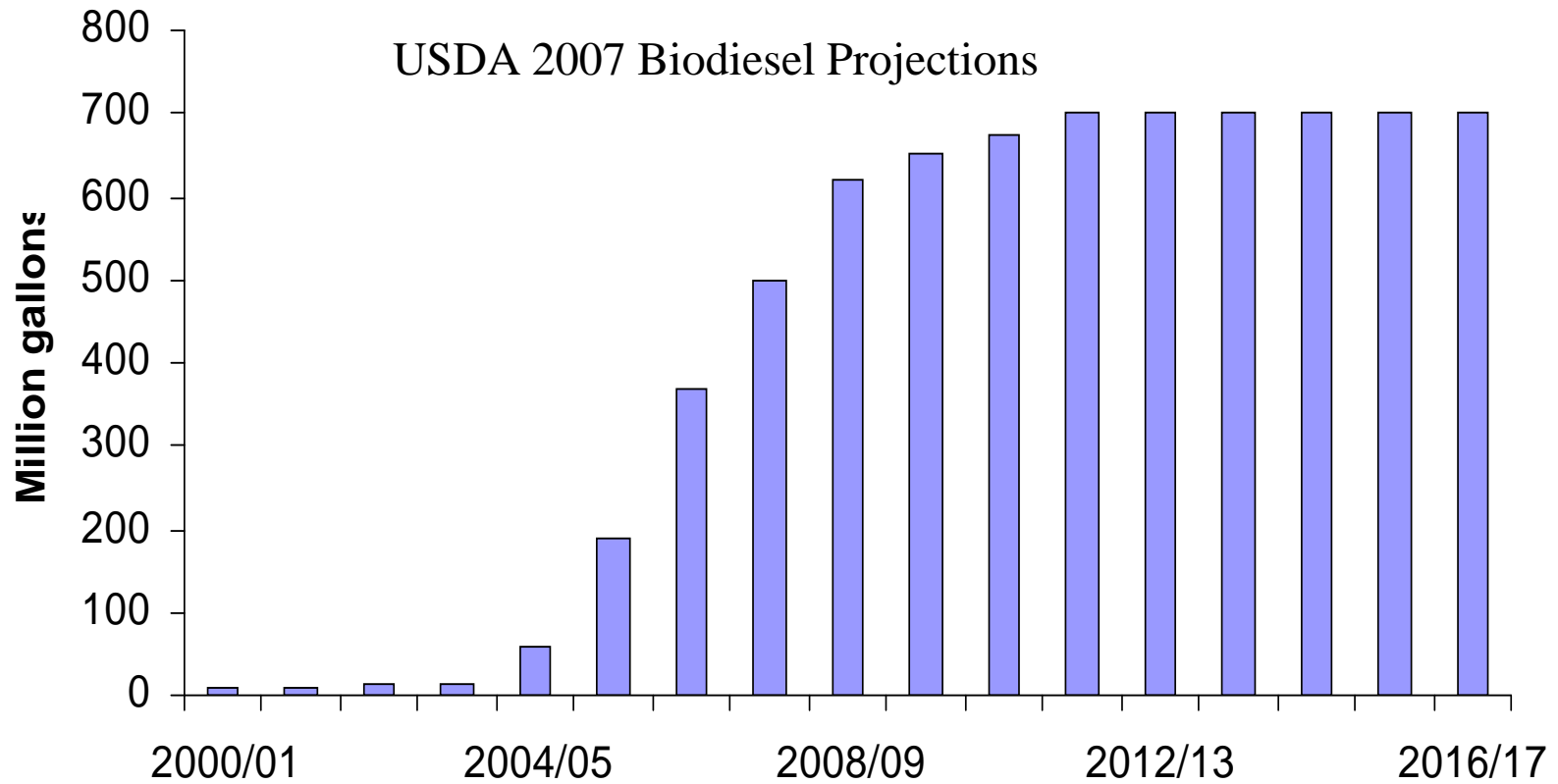
- 1) Government policy and economics are the primary factors driving biodiesel growth
- 2) Identify the economic limits of biodiesel feedstock supply that create economic tradeoffs between fuel and food
- 3) Provide information that will help project the future growth of biodiesel and potential effect on food and feed supply

Biodiesel Production Influenced by Policy

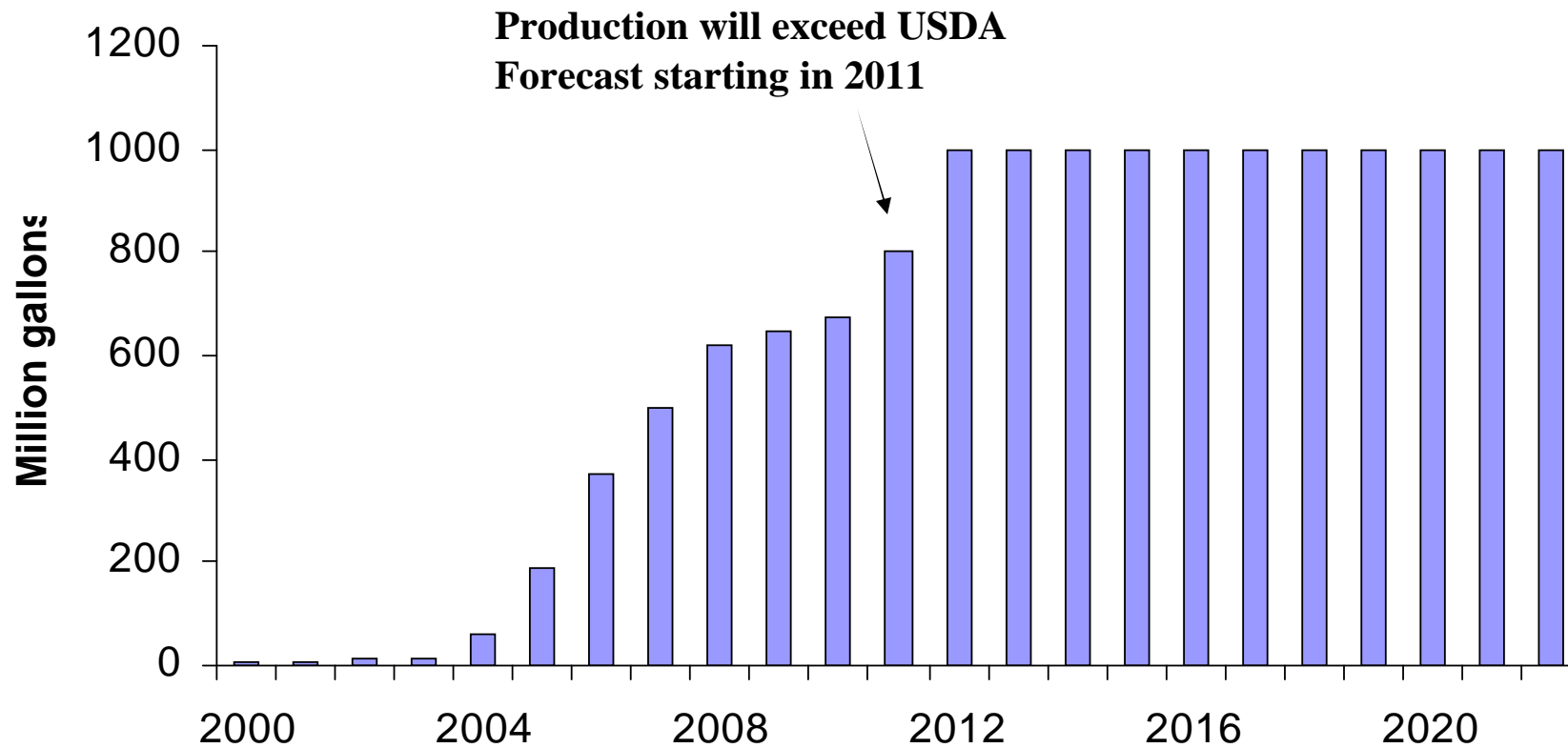


The Market Will Limit Biodiesel Growth

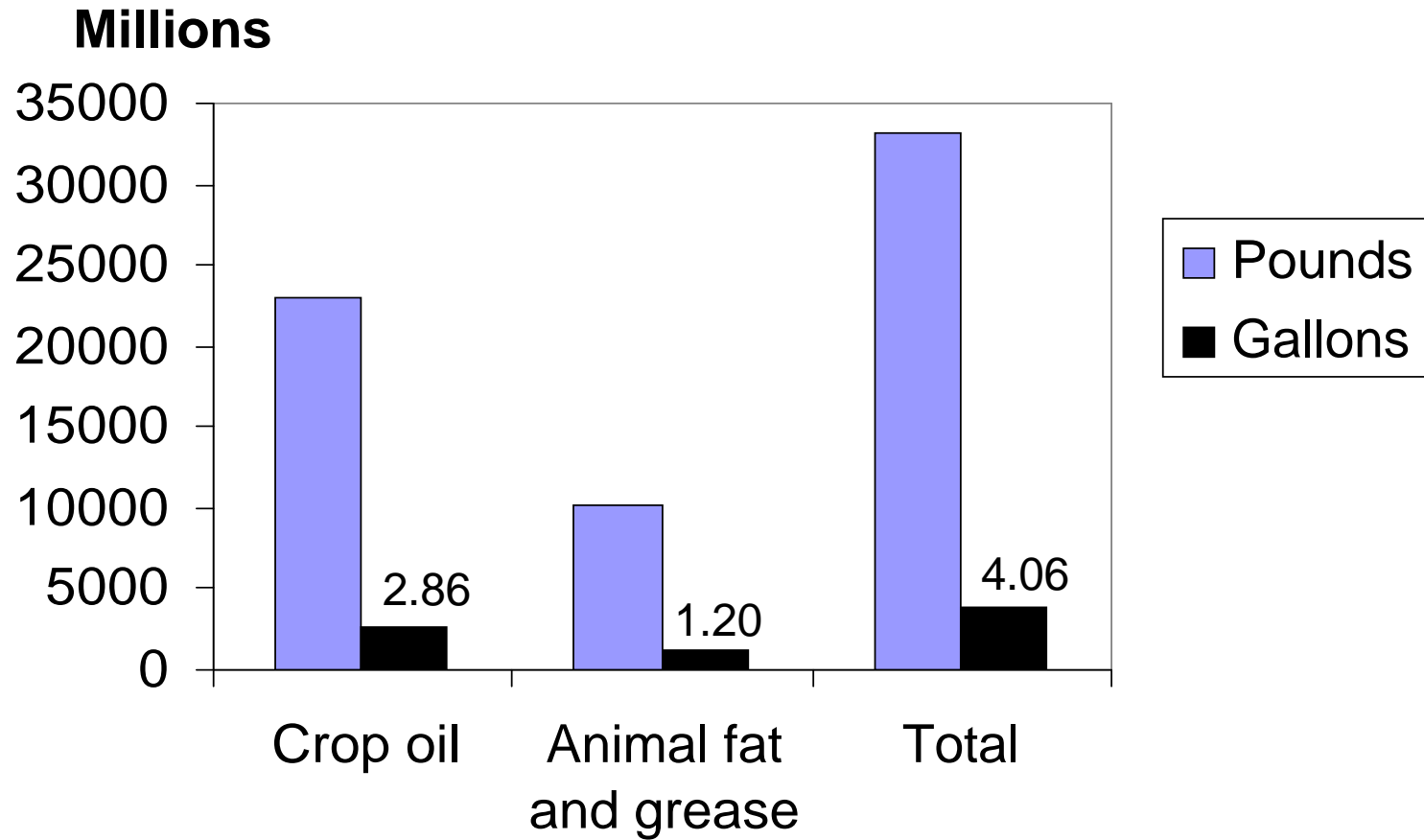
Production will peak in 2011 leveling off at 700 million gallons - 23% of soybean oil



At a minimum the 2007 Energy Act will increase biodiesel production to 1 billion gallons per year by 2013

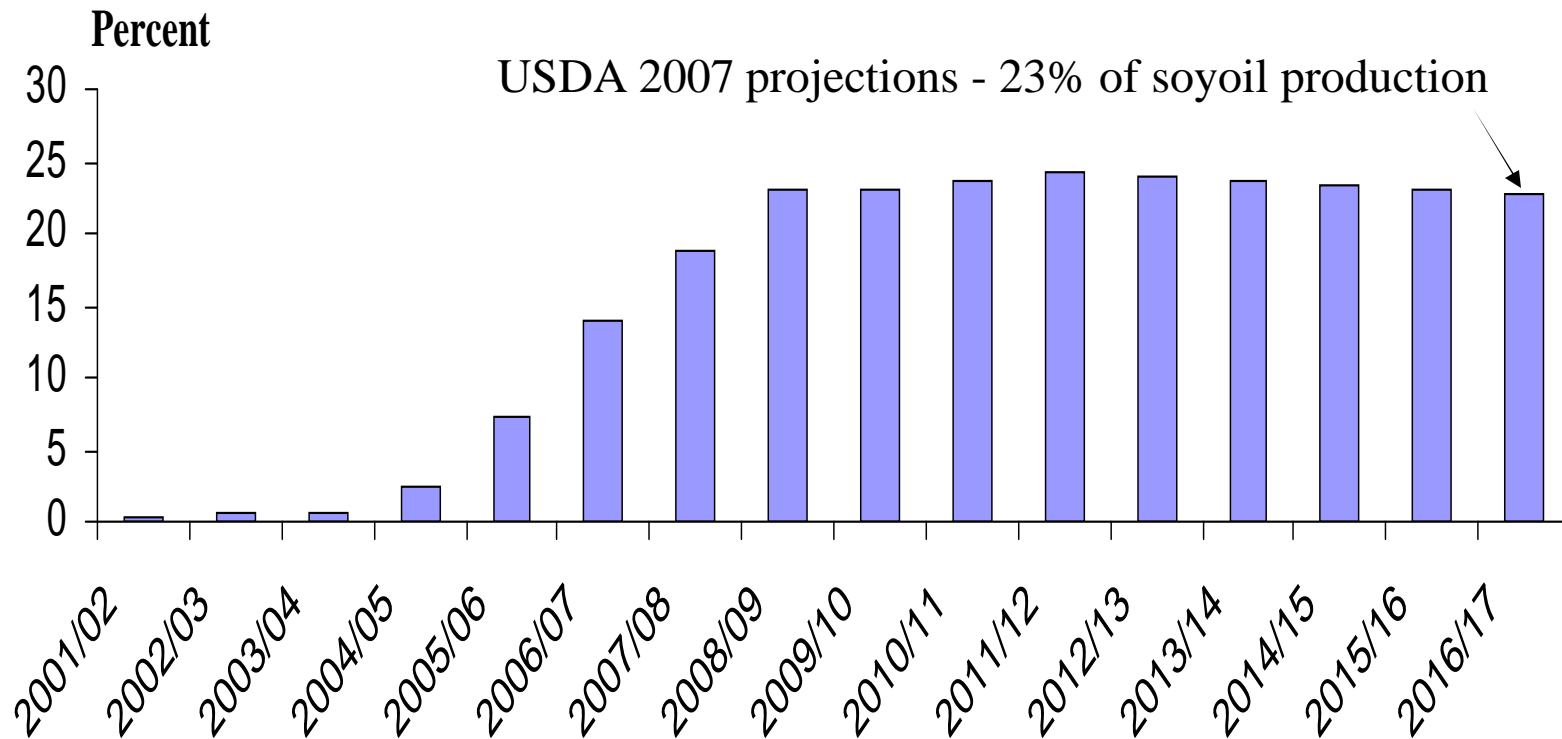


Current Potential U.S. Feedstock Supply



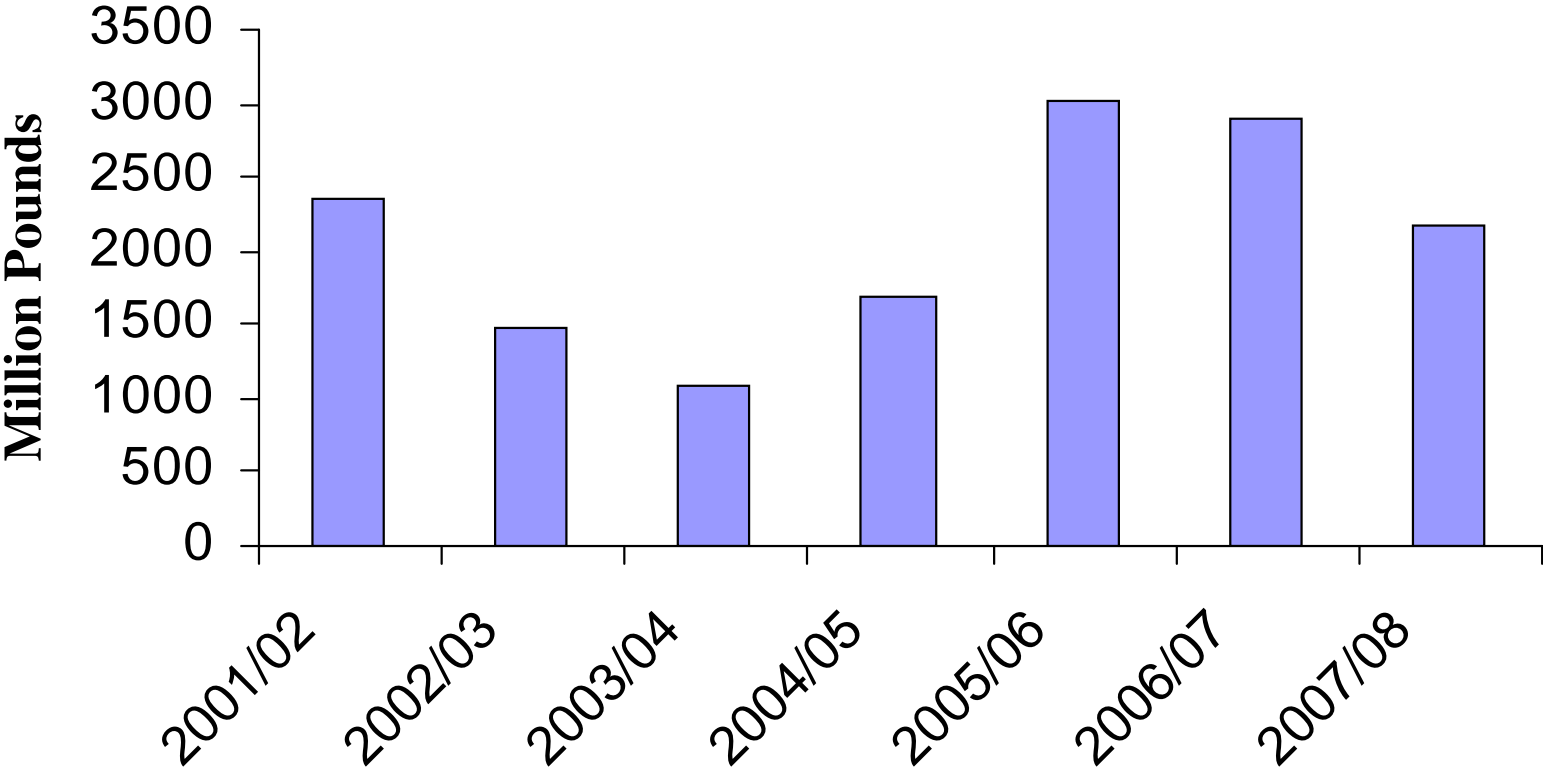
Source: USDA and Department of Commerce

Share of Soybean oil Production Used for Biodiesel

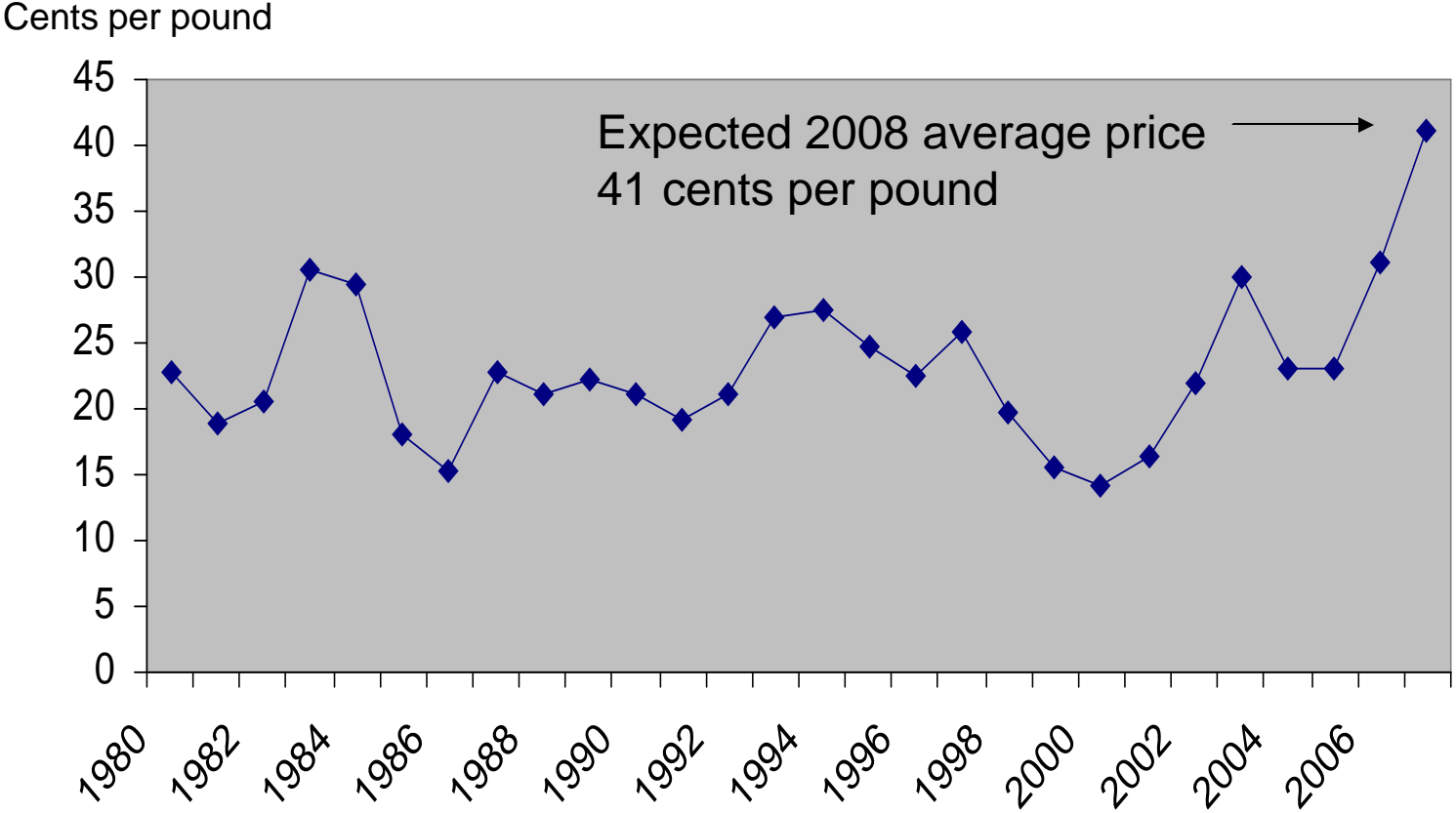


Source: USDA

Effect of Biodiesel Demand on Ending Soybean Oil Stocks

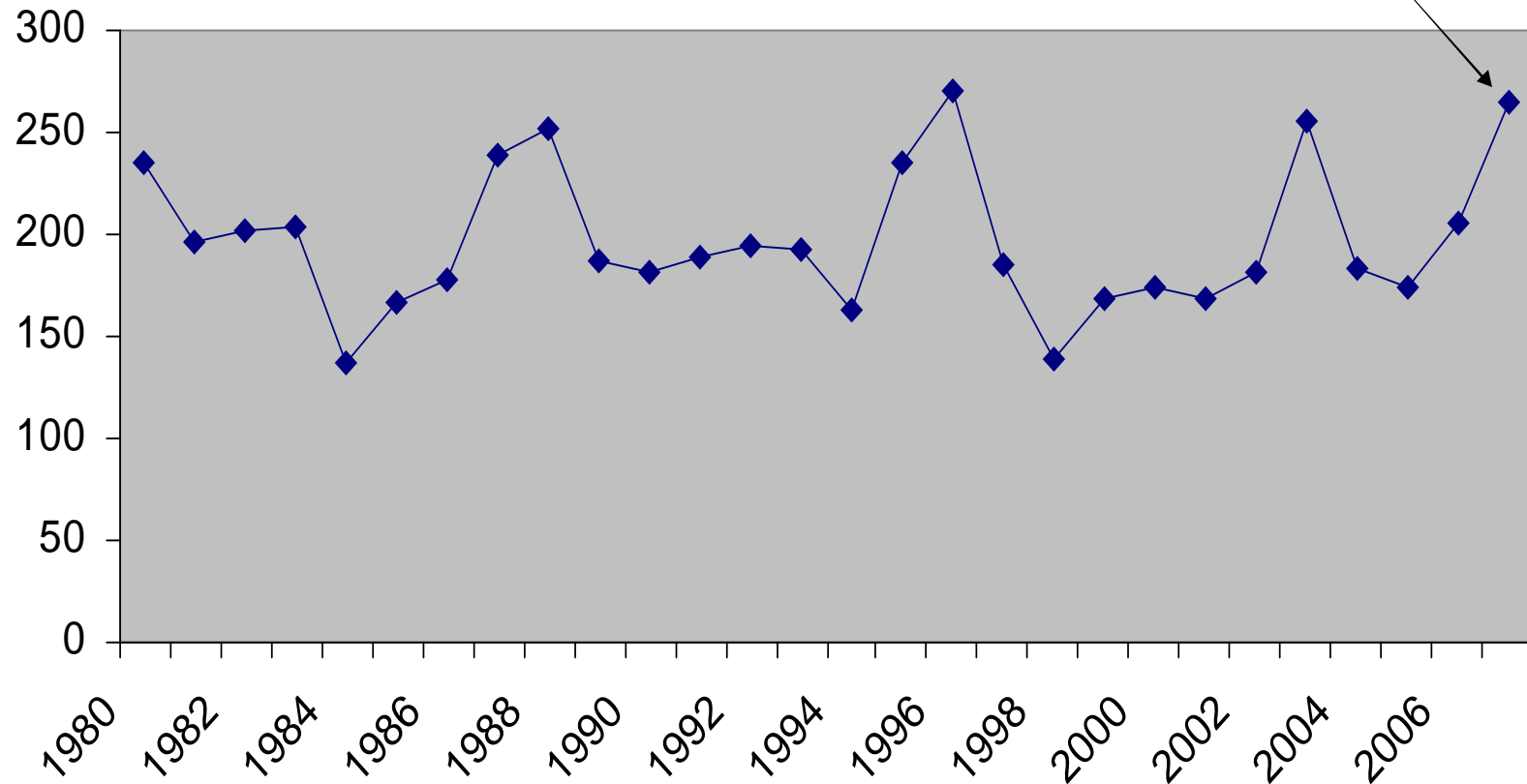


Soybean Oil Prices



Soybean Meal Prices

Expected 2008 average price
\$265 per ton



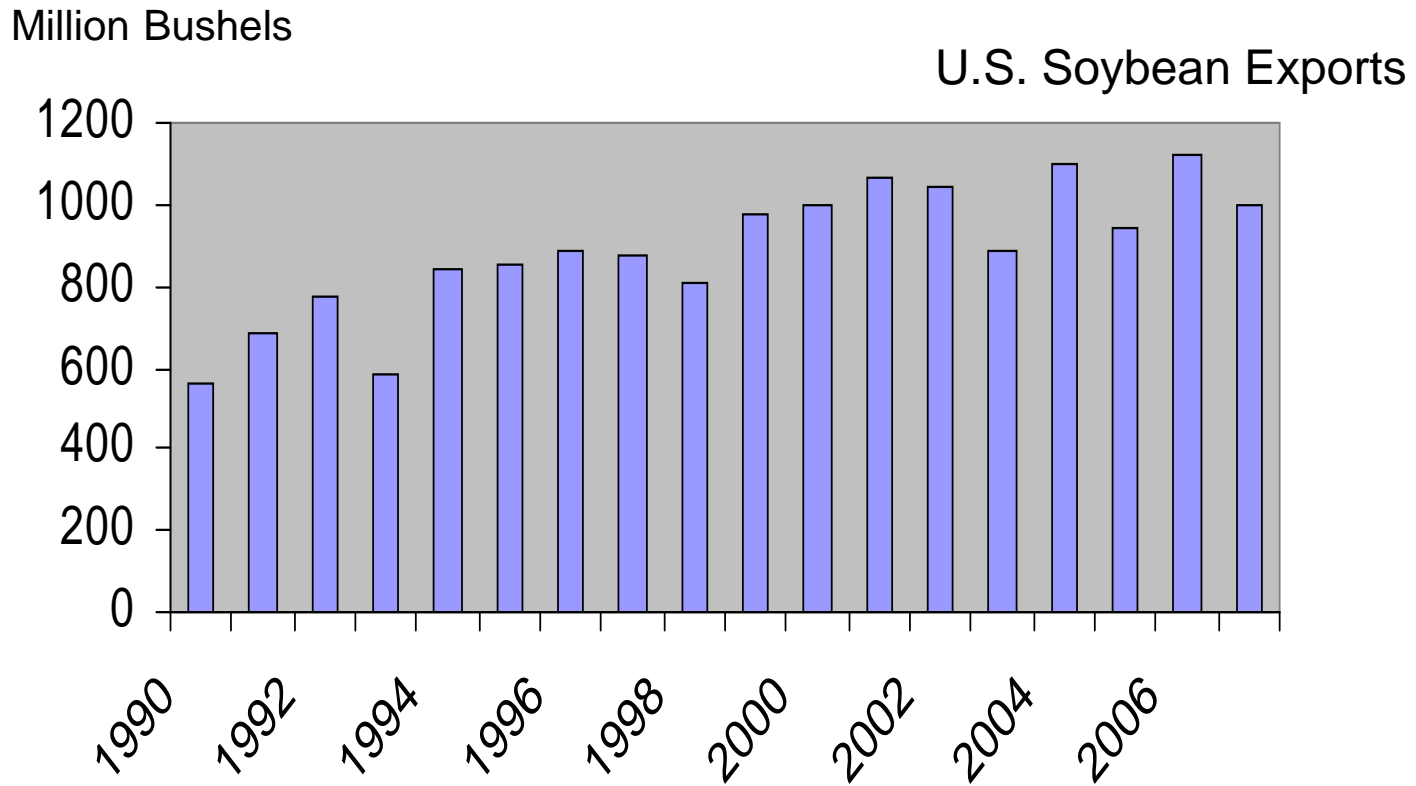
Effect on U.S. Food Prices

- Soyoil prices going up but not having a major effect on the cost of cooking oil because the mark-up from wholesale price to retail price is so high.
- The price of animal feed is going up including soy meal and this having an effect on the price of meat and dairy products. But this mostly the result of other factors, including corn ethanol.
- There is also concern that the rise in all commodity prices, including corn, soybeans, wheat, and rice, is causing a general rise in food prices. The consumer price index (CPI) for all food has been increasing for the past 10 years (BLS). And in 2007, the CPI for all food jump 4.5 percent, as retailers pass on higher commodity and energy costs to consumers in the form of **moderately higher** retail prices (ERS).

Effect on U.S. Food Prices

- So we had a moderate increase in food prices in 2007 and with the new RFS, food prices can be expected to continue to rise. However, high food and feed prices will likely trigger a supply response that will help moderate higher prices.
- The domestic production of soybean oil is likely to increase by diverting soybean exports to the biodiesel market. A large percentage of U.S. soybean production every year is exported.
- Reducing exports might ease some of the pressure in the U.S., but would have a major effect on the world protein market.

If soybean exports were crushed for domestic use the potential supply of biodiesel could increase by over 1 billion gallons



Reducing Soybean Exports Would Increase Vegetable Oil Prices

- The US is a major soybean exporter (about 40 percent), so reducing U.S. soybean exports will reduce world soybean supply and put upward pressure on world prices. Importing countries will have to get their soybeans from other countries and probably pay a higher price.
- For example, East Asia (mostly China) is the largest importer of soybeans (over 50 percent of world exports) and they may have to increase soybean imports from Brazil and/or Argentina. Mexico is also a large importer of soybeans. Not nearly as big as China, but it is one of the top markets for U.S. soybeans.

Higher Cooking Oil Prices Could Reduce Real Income for Low Income Consumers

- Also, if U.S. soybean oil exports were reduced in order to make more biodiesel, this would also put price pressure on soybean oil prices. Although, the effect would not be as great as reducing bean exports because the U.S. only accounts for about 5 percent of world exports. Mexico is the largest importer of U.S. oil (about 25 % in 2005).
- Consumers in lower income countries like China and Mexico could be impacted. These consumers would lower their demand and look for cheaper substitutes, which may be difficult to find.

Crushing More Soybeans Would Increase the Supply of Meal

- Increasing meal supply would result in more exports. About 14 percent of current world exports come from the U.S.
- Soybean meal is used for animal feed and is the world's number one source of protein.
- The poultry industry, including broilers, turkeys and laying hens, is the major user of soybean meal in the United States.
- Soybean meal is also the dominant source of supplemental protein in swine diets worldwide and is also used for dairy, beef, and pet foods.

The Increase in Soybean Meal Could Help Offset Rising Feed and Protein Prices

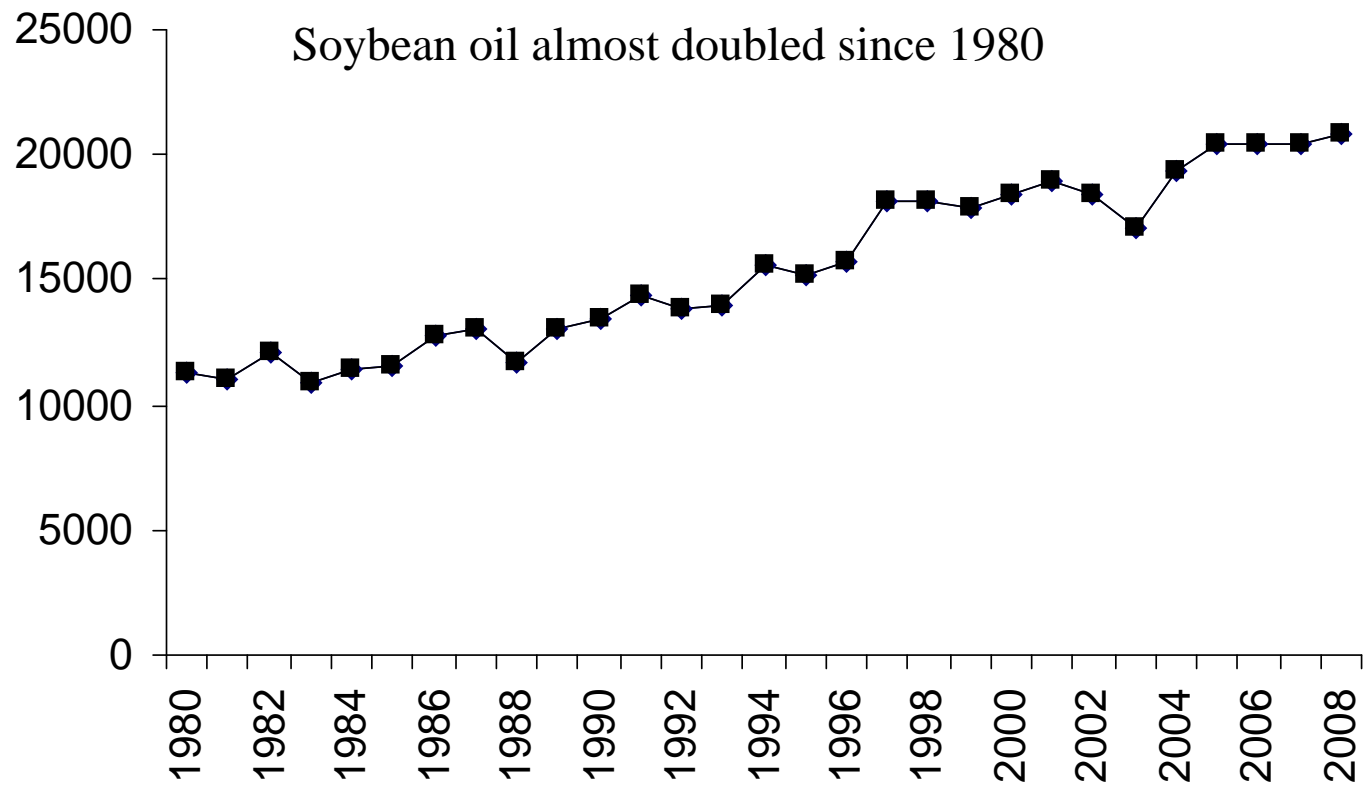
- Although, soybean meal prices are expected to rise because of other economic factors, the increase in soybean supply from biodiesel production will help offset rising feed and protein prices.
- This could help low income countries. For example, Mexico and Latin America accounted for 54 percent of our exports last year.
- Other countries that would benefit from lower meal prices include Canada and the European Union, which by far the largest importer of soybean meal.

Long Run Supply Response – New Sources of Feedstock

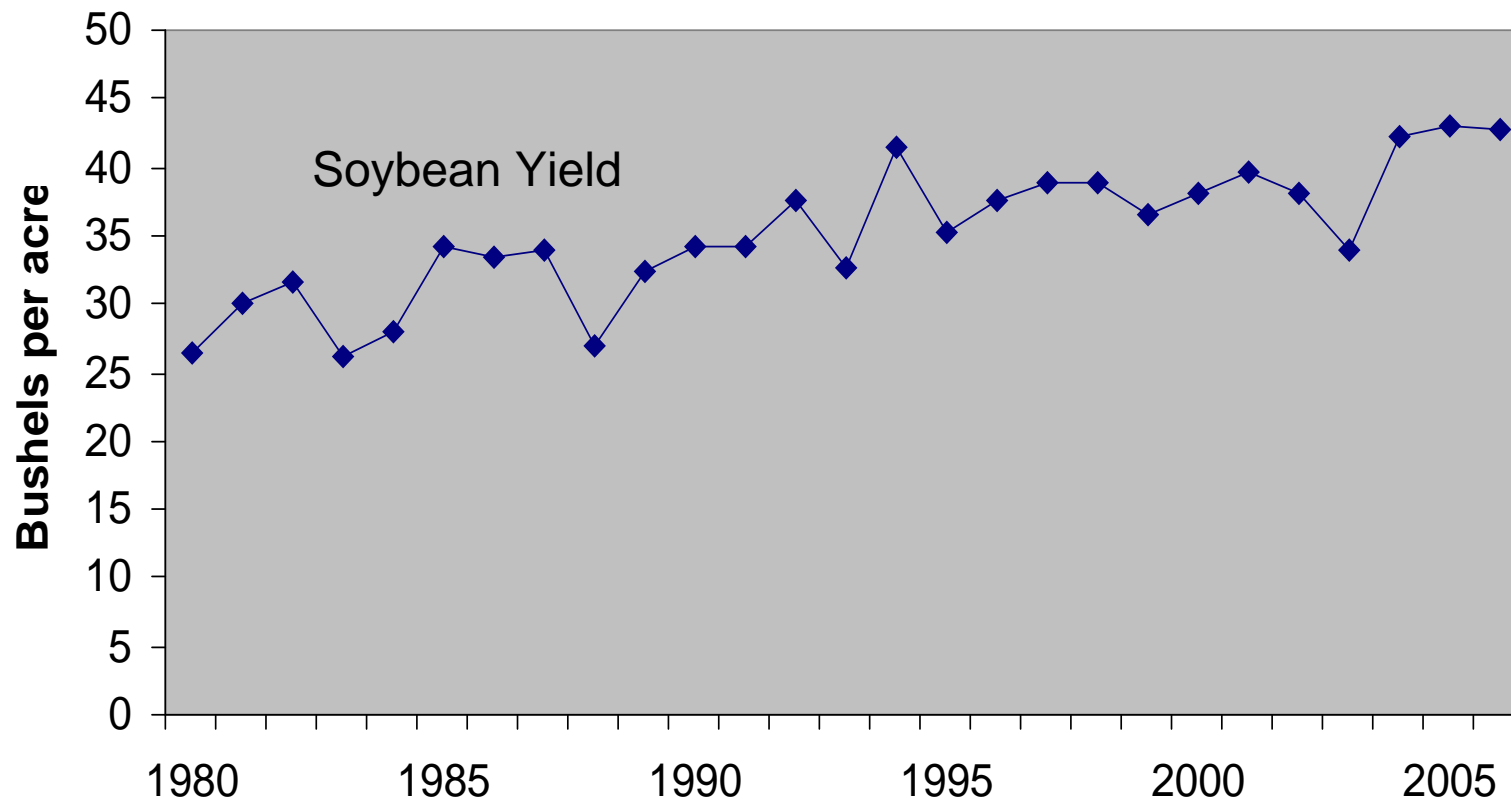
- Lager domestic crush and less exports
- Increase yields
- Increase production of biodiesel from other feedstocks
- Develop soybean plants and other oil crops with higher oil contents
- Develop non-food oilseed plants
- Increase soybean and other oil crop acreage

Feedstock Supply Increasing Overtime

Million pounds



Supply Will Increase Overtime With Yield Increases

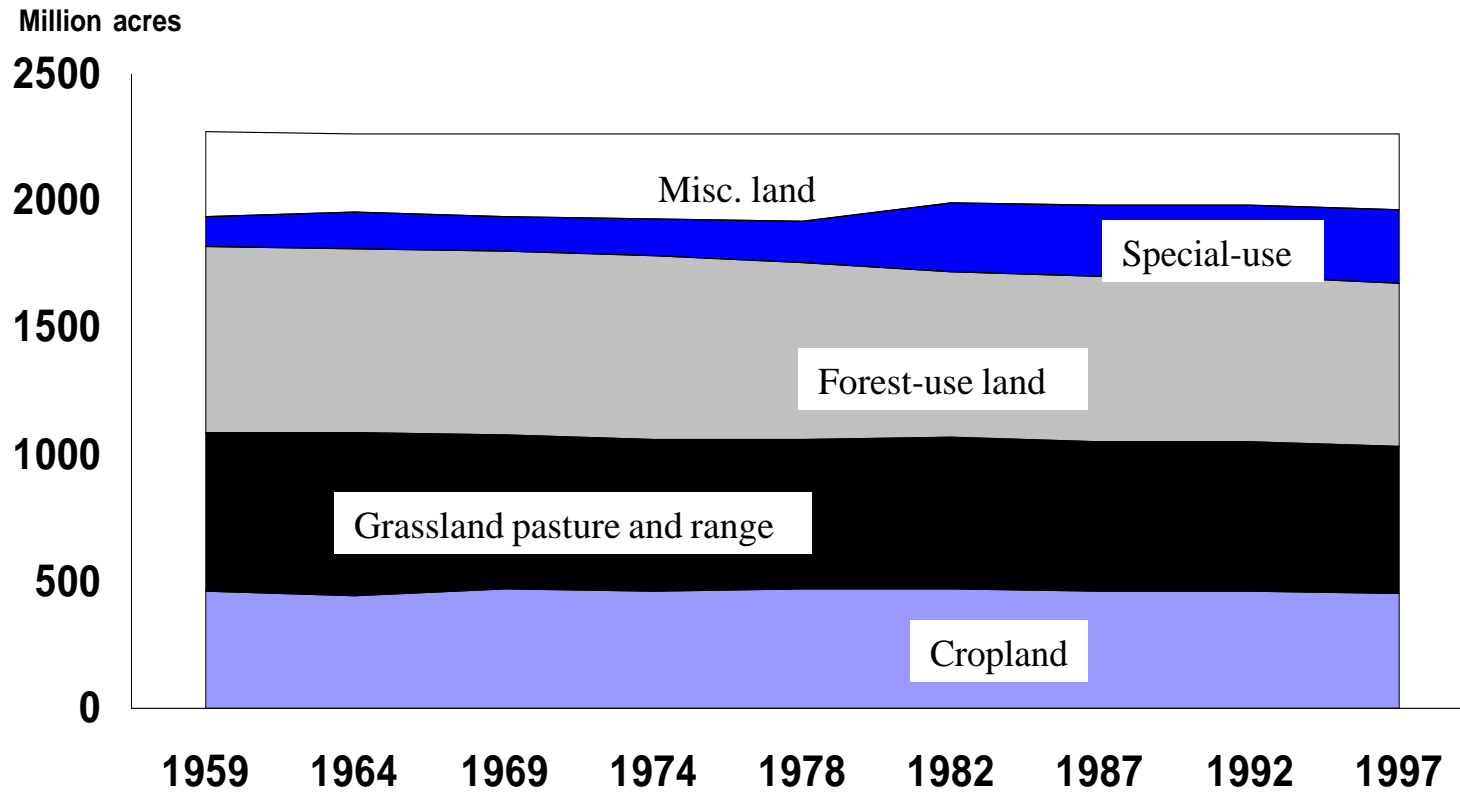


Higher Prices Give Farmers an Incentive to Increase Supply

- Since 1980, yields have increased from about 25 bushels per acre to 40 bushels per acre.
- Increasing soybean yield by 1 bushel per acres could increase biodiesel supply by 1 million gallons assuming land use remains about the same.
- ARS plant breeders, Monsanto and others are developing new soybean seeds that have a higher oil content. Seed companies are also developing soybeans that can be grown in more diverse climates and soil types.
- Non-food oilseeds plant could be developed, such as Jatropha, mustard seed, camelina, and rapeseed. These plants have high oil contents, and require less inputs.

Will High Soybean Prices Provide an Incentive for Farmers to Increase Soybean Acreage?

Figure 9 -- Major Uses of Agricultural Land



Source: Vesterby and Krupa, ERS, USDA, 2001

U.S. Soybean Acreage Not Likely to Increase Significantly

- Limited land creates competition for crop acreage and when farmers have an economic incentive to plant more of one crop they substitute with another crop
- For example, market prices shifted acreage in favor of corn in 2007 and less soybeans and other crops were grown. However, with higher soybean prices, more soybean acreage is expected in 2008. But total crop land is not expected to increase much in the United States.
- However, higher prices will likely encourage farmers in Brazil and Argentina to continue to increase their soybean acreage,

Worldwide Supply Response for Agricultural Commodities – Wheat, Corn, Cotton, Soybeans, Sugar

- Sustained higher prices will encourage crop production around the world, even in poor countries where crop production has been limited.
- Overproduction of food in industrialized countries has depressed agricultural commodity prices and for decades these low prices have been a major cause of economic stagnation in poor counties (United Nations).
- But now the rapidly growing biofuels market is drawing down crop surpluses in industrialized countries, causing world commodity prices to rise, which provides an incentive for farmers in poor countries to grow more of their own crops.

The Food and Agricultural Organization (FAO) Recognizes the Potential Opportunities that the Growing Biofuel Market Offers to Small Farmers Around the World

- While FAO recognizes the potential negative effects of expanding biofuel production on low income consumers, it also is aware that the growing biofuel market offers new opportunities for small farmers around the world.
- FAO calls for a plan to develop bioenergy policies ensuring “that everybody benefits” – the ultimate aim is to grow enough crops to meet both fuel and food demand
- FAO has recommended small-scale financing to help farmers in poor countries produce local biofuel

Disagreement Between Environmental Groups

- Lester Brown, Earth Policy Institute, November 2006 "epic competition between 800 million people with automobiles and the 2 billion poorest people," and predicts that shortages and higher food prices will lead to starvation and urban riots
- Christopher Flavin, president of the Worldwatch Institute (which was founded by Lester Brown), August, 2007. The increase in world agriculture prices caused by the global boom in biofuels could benefit many of the world's rural poor. This is one conclusion of a new 450-page book, "Biofuels for Transport: Global Potential and Implications for Energy and Agriculture," authored by the Worldwatch Institute and published by Earthscan.
- The book finds that rising food prices are a hardship for some urban poor, who will need increased assistance from the World Food Programme and other relief efforts. However, it notes that the central cause of food scarcity is poverty, and seeking food security by driving agricultural prices ever lower will hurt more people than it helps.